**NATURAL RESOURCES CONSERVATION SERVICE**
**CONSERVATION PRACTICE STANDARD**

# RESIDUE MANAGEMENT, RIDGE TILL

**(Acre)**
**CODE 329C**

## DEFINITION

Managing the amount, orientation, and distribution of crop and other plant residues on the soil surface year-round, while growing crops on preformed ridges alternated with furrows protected by crop residue.

## PURPOSES

This practice may be applied as part of a conservation management system to support one or more of the following purposes:

- Reduce sheet and rill erosion.
- Reduce wind erosion.
- Maintain or improve soil organic matter content and tilth.
- Manage rainfall and irrigation water to increase plant available moisture.
- Modify cool wet site conditions.
- Provide food and escape cover for wildlife.

## CONDITIONS WHERE PRACTICE APPLIES

This practice applies to all cropland and other land where crops are grown.

This standard includes tillage and planting methods commonly referred to as ridge till or ridge planting. It does not include no till planting on ridges, or bedding or listing operations which primarily buries crop residues.

## CRITERIA

**General Criteria Applicable to All Purposes Named Above**

Residues shall not be disturbed except as explained in the Operation and Maintenance section.

Residues shall not be burned.

Loose residues to be retained on the field shall be uniformly distributed on the soil surface. Cultivation and planting equipment designed to operate on ridges shall be used, such as cultivators equipped with ridging attachments, and planters equipped with ridge planting attachments such as row cleaning devices and guidance systems.

**Additional Criteria to Reduce Sheet and Rill Erosion**

The amount and placement of residue needed, and the orientation of ridges in relation to the contour, shall be determined using current NRCS erosion prediction technology. Calculations shall account for the effects of other practices in the conservation management system. Partial removal of surface residue by means such as tillage, baling, or grazing shall be limited to retain the amount needed.

Planting and fertilizer placement shall disturb no more than one third of the row width. Soil and residue removed from the top of the ridge shall be moved into the furrow between the ridges.

After planting, the top of the ridges shall be maintained at least 3 inches higher than the furrow between the ridges.

The ridge shall be shaped to prevent erosion along the row by directing runoff to the protected furrow area. In areas where high intensity rainfall is likely to occur after harvest, stubble and stalk shredding should be delayed as long as feasible to avoid loss of residue due to floation and runoff.



**NRCS, Texas**
**May, 1998**

**Additional Criteria to Reduce Wind Erosion**

The amount and orientation of residue needed during periods when wind erosion is expected to occur, shall be determined using current NRCS wind erosion prediction technology. Shredding and stalk destruction should be delayed as long as feasible.

Partial removal of residue by means such as tillage, baling, or grazing shall be limited to retain the amount needed. Calculations shall account for the effects of ridge height, spacing , and direction, and of other practices in the conservation management system.

**Additional Criteria to Maintain or Improve Soil Organic Matter Content and Tilth**

The amount of residue needed to achieve the desired soil condition, shall be determined using the current approved soil conditioning index procedure.

Partial removal of residue by means such as tillage, baling, or grazing shall be limited to retain the amount needed to maintain soil organic matter content. Calculations shall account for the effects of other practices in the conservation management system.

Cultivation to rebuild ridges shall be done using tools which maintain residues in the surface layer.

**Additional Criteria to Manage Rainfall and Irrigation Water to Increase Plant Available Moisture**

Stubble shall be left on the soil surface as much as possible by the harvesting operation. Residue shall be left in the furrow bottoms to improve infiltration and reduce surface evaporation for as long as possible after planting until ridges are rebuilt by cultivation.

**Additional Criteria To Modify Cool Wet Site Conditions**

Ridge height prior to planting shall not be less than 6 inches. After planting, the top of the ridge shall be maintained at least 3 inches higher than the furrow between the ridges.

**Additional Criteria to Provide Food and Escape Cover for Wildlife**

The amount of residue and height of stubble needed to provide cover during winter months shall be determined using the approved habitat evaluation procedure found in Regional Biology Technical Note No. 413, *Wildlife Habitat Evaluation for Resource Management Systems* or other approved procedure.

Residues shall not be removed unless it can be determined by the habitat evaluation procedure that removal will not adversely affect habitat values.

## CONSIDERATIONS

Removal of residue by such means as tillage, baling, or grazing often produces negative impacts on resources. These activities should not be performed without full evaluation of impacts on soil, water, animal, plants, and air resources.

Ridge till may be practiced continuously throughout some crop sequences, or may be managed as part of a residue management system which includes other tillage and planting methods such as mulch till or no till. In mixed systems, ridges must be periodically re-established.

Production of adequate amounts of crop residues necessary for the proper functioning of this practice can be enhanced by selection of high residue producing crops and crop varieties in the rotation, use of cover crops, and adjustment of plant populations and/or row spacings.

By providing a choice of weed control methods, this practice can reduce herbicide requirements when used in a conservation management system.

Where improvement of soil tilth is a concern, continuous ridge planting will allow organic material to accumulate in the surface horizon. Reconstruction of ridges in the same row area year after year will maximize organic matter buildup and biological activity in the row.

Soil compaction may be reduced by controlled traffic, where wheel traffic from all operations is limited to the area between designated rows or traffic areas.

Where ridges direct runoff to areas of concentrated flow, these areas can be protected by Grassed Waterways, Underground Outlets , or other suitable practices.

The value of residues for wildlife habitat can be enhanced by leaving rows of unharvested crop standing at intervals across the field.

## PLANS AND SPECIFICATIONS

Specifications for establishment and operation of this practice shall be prepared for each field or treatment unit according to the Criteria, Considerations, and Operation and Maintenance described in this standard.

Specifications shall be recorded using approved specification sheets, job sheets, narrative statements in the conservation plan, or other acceptable documentation.

These specifications will include as a minimum: row direction, ridge height and spacing, ridge width, residue disposition (when and how much to be left, baled, or grazed); and weed control options.

## OPERATION AND MAINTENANCE

Maintain ridge height during the critical time of the year as determined by the appropriate erosion prediction technology.

After planting, residues shall be maintained in the furrows until the ridges are rebuilt by cultivation. Ridges shall be rebuilt to their original height and shape during the last row cultivation.

Ridge height should be maintained throughout the harvest and noncrop seasons by controlling equipment or livestock traffic.

Following crop harvest and any secondary residue removal, residues shall be maintained at levels to meet the conservation objective until planting with no additional disturbance except for normal weathering.

**APPROVAL AND CERTIFICATION**

# RESIDUE MANAGEMENT, RIDGE TILL

**(Acre)**

**CODE 329C**

**PRACTICE STANDARD APPROVED:**

_____/s/ Monty Dollar_____ _____May, 1998_____

**State Agronomist** **Date**

This practice standard is needed in the _____ Field Office Technical Guide.

_____ _____

**Natural Resource Manager** **Date**

**CERTIFICATION:**

Reviewed and determined adequate without need of revision.

_____ _____

**Technical Specialist (Agronomy)** **Date**

_____ _____

**Technical Specialist (Agronomy)** **Date**